UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

NMFS Tracking No.:
F/NWR/2004/00517

July 16, 2004

Mark Madrid, Forest Supervisor
Payette National Forest
P.O. Box 1026
102 West Lake Street
McCall, Idaho 83638

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Marble Fire Suppression and Monumental Creek Road Repair Emergency Actions (2 Projects)

Dear Mr. Madrid:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA=s National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the Marble Fire Suppression and Monumental Creek Road Repair Emergency Actions in the Middle Fork Salmon River Drainage. In this Opinion, NOAA Fisheries concludes that the emergency actions are not likely to jeopardize the continued existence of ESA-listed Snake River spring/summer chinook salmon, Snake River steelhead, and designated critical habitat.

This document contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook salmon. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting
from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this letter, please contact Bill Lind of my staff in the Idaho State Habitat Office at 208-378-5697.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

Enclosure

cc: J. Foss - USFWS
J. Hansen - IDFG
R. Eichsteadt – NPT
D. Burns - PNF

Endangered Species Act Section 7 Consultation Biological Opinion
and
Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Marble Fire and Monumental Creek Road Repair Emergency Consultation
Snake River Spring/Summer Chinook Salmon
Snake River Steelhead
Big Creek, HUC# 1706020615
Monumental Creek, HUC# 1706020613
Valley County, Idaho

Lead Action Agency: USDA Forest Service, Payette National Forest

Consultation Conducted By: NOAA=s National Marine Fisheries Service,
Northwest Region

Date Issued: July 16, 2004

Issued by: for Michael R Crouse
D. Robert Lohn
Regional Administrator

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BA	Biological Assessment
BAER	Burned Area Emergency Rehabilitation
CRB	Columbia River Basin
dbh	Diameter at Breast Height
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Units
FCRPS	Federal Columbia River Power System
FR	Forest Road
HUC	Hydrologic Unit Code
IDFG	Idaho Department of Fish and Game
LWD	Large Woody Debris
MPI	Matrix of Pathways and Indicators
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
NOAA Fisheries	NOAA's National Marine Fisheries Service
NTU	Nephelometric Turbidity Units
Opinion	Biological Opinion
PFC	Properly Functioning Condition
PFMC	Pacific Fishery Management Council
PNF	Payette National Forest
RCA	Riparian Conservation Areas
Services	NOAA's National Marine Fisheries Service and U.S. Fish and Wildlife Service
SWIE	Southwest Idaho Ecogroup
TMDL	Total Maximum Daily Loads
USFS	U.S. Forest Service
USGS	United States Geological Survey
WCI	Watershed Condition Indicator
WFSA	Wildland Fire Situation Analysis
YOY	Young-of-the-Year

1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (together "Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations
50 CFR 402.

The analysis also fulfills the Essential Fish Habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

The U.S. Forest Service (USFS), Payette National Forest (PNF), has requested emergency consultation for the effects of two emergency actions completed during the summer of 2003 which include: (1) Specific suppression actions that occurred on the Marble Fire not addressed in, or not consistent with, the programmatic Wildland Fire Suppression consultation; and, (2) Emergency road repair actions to Forest Road (FR) 375, the Monumental Creek (or Thunder Mountain) Road. The USFS has completed these actions according to its authority under the Forest and Rangeland Renewable Resources Planning Act (1974), as amended by the National Forest Management Act (1976) and its implementing regulations. The administrative record for this consultation is on file at the NOAA Fisheries Idaho Habitat Branch office.

1.1 Background and Consultation History

NOAA Fisheries received a complete biological assessment (BA) and EFH assessment on the Marble Fire and Monumental Road Repair emergency actions on May 03, 2004, and consultation was initiated at that time.

The actions would not likely affect tribal trust resources. Because the actions would not affect tribal trust resources, no tribes would be affected and further tribal coordination is not necessary.

1.2 Emergency Actions

As outlined in the Services' consultation regulations (50 CFR 402.05), emergency circumstances can mandate the need to consult in an expedited manner, conducting consultation informally through alternative procedures consistent with the requirements of sections 7(a)-(d) of the ESA. This provision applies to situations involving acts of God, disasters, casualties, national defense or security emergencies, etc. It is further required that formal consultation be initiated as soon as practicable after the emergency is under control. The Federal agency is required to submit information describing the nature of the emergency action(s), the justification for the expedited consultation, and an assessment of the impacts that occurred to ESA-listed species and/or their habitats. The Services evaluate this information and issue an Opinion including the information and recommendations given during the emergency consultation.

Federal Actions considered in this Opinion were located within the Lower Middle Fork Salmon River 4th code United States Geological Survey hydrologic unit code (HUC) #17060206. Marble Fire suppression actions occurred in and around Big Creek (5th code HUC #1706020615), and in the vicinity of private land near Edwardsburg, Idaho (T20N R9E Sections 2 and 35). Monumental road repair actions occurred immediately adjacent to upper Monumental Creek (T19N R10E Sections 3, 9 and 10) upstream of Roosevelt Lake (within the Upper Monumental 6th code HUC #170602061304).

1.2.1 Marble Fire Suppression

The Marble Fire began with a lightning strike on August 7, 2003, and burned approximately 6,080 total acres. The PNF requested emergency consultation for the Marble Fire on August 21, 2003. The emergency action encompassed activities related to fire suppression that were not previously analyzed for effects in the Wildland Fire Suppression Activities portion of the 2001 Section 7 Watershed BA (Wagoner and Burns 2001). The emergency action also includes actions that were not implemented consistent with that BA and its Section 7 consultation (NOAA Fisheries concurrence letter issued August 9, 2001), and have the potential to affect ESA-listed fish species and/or designated or proposed critical habitat. Support activities occurred from August 8 to August 31, 2003.

1.2.1.1 Wildland Fire Situation Analysis Fish Biologist Involvement

Although three PNF fish biologists were assigned to the fire as resource advisors, a fish biologist was not present and involved in the development of the Wildland Fire Situation Analysis (WFSA) for the Marble Fire. Such involvement was identified as a mitigation measure for potential effects to ESA-listed fish species for the programmatic Wildland Fire Suppression Activities in the 2001 BA (Wagoner and Burns 2001). These resource advisors were present

at or near fire suppression activities on a daily basis, communicating regularly with crews and incident commanders who were a part of incident action planning, advising fire personnel on fish mitigation for fire suppression actions.

1.2.1.2 Suppression Activities

1.2.1.2.1 Vegetation Clearing During suppression activities, the PNF developed several sites to aid the fire fighting effort. On McFadden ridge, one **3**-acre helispot was constructed (T21N R10E Section 18) and 0.4-mile of fireline were constructed and waterbarred (T21N R10E Sections 7 and 18). No construction occurred within Riparian Conservation Areas (RCAs) during either effort.

Safety snags, lodgepole pine (*Pinus contorta*; 1- to 8-inches diameter at breast height [dbh]), lower limbs of larger trees, and brush were felled by chainsaw and chipped to reduce fuel loads around the Edwardsburg area. In lodgepole stands, the thinning objective was to leave 15-feet between stems. Some of this fuel reduction occurred within the RCA of Smith Creek and McCorkle Creek, but not within 60-feet of the streambanks. Fuel reduction thinning also occurred within the RCA of Big Creek on private land in the location of the spike camp.

1.2.1.2.2 Spike Camp A five acre spike camp was also constructed on private land along mainstem Big Creek (T21N R9E Section 35), the main portion of which was located outside Big Creek RCAs. However, 33 individual tents were located within the RCA. Porta potties and vehicles were also located in the RCA on private land. Although crews were briefed daily and given direction within the daily Incident Action Plan to avoid Big Creek and not to harass chinook salmon, no signing, flagging or other physical means of directing crews to avoid the river were installed. One salmon redd was identified about 75-feet downstream from the camp area. Riparian vegetation and a corral fence hindered access to the redd. The spike camp was later harrowed and seeded in rehabilitation efforts.

1.2.1.2.3 Helicopter Dipping Although dipping is covered through Section 7 consultation on the 2001 Section 7 watershed BA (Wagoner and Burns 2001), Big Creek had been identified as being closed to dipping. During suppression efforts, two resource advisors were informed by separate witnesses that helicopter dipping had occurred in the vicinity of the beaver ponds near Big Creek during the initial days of fire fighting (August 13-14, 2003). It was not reported clearly whether that dipping occurred in Big Creek mainstem or in the beaver ponds in the side channels adjacent to Big Creek. Another witness, Dave Reddick (resides in cabin near dipping site, and there throughout fire suppression actions), informed the PNF in August 2003 that dipping occurred only in the beaver ponds and not in mainstem Big Creek.

1.2.1.2.4 Vehicle Fording Two stream fords are located across Big Creek mainstem in the vicinity of Edwardsburg. In the August 13, 2003, incident action plan, personnel had been directed to limit vehicle fording of mainstem Big Creek to one round trip per day. On August 14 and 15, two different vehicles associated with the fire forded Big Creek at the crossing located by the spike camp on private land, approximately 75-feet upstream from the previously described chinook salmon redd. To better avoid and minimize adverse effects to the redd and holding/spawning chinook salmon, fire fighting personnel were later given written direction within Daily Incident Plans to not ford Big Creek at either location.

The Burned Area Emergency Rehabilitation (BAER) report for the fire concluded there were no emergency threats to ESA-listed fish species from these activities and did not recommend any BAER actions related to protection of aquatic resources.

1.2.2 Monumental Creek Road Repair

A segment of the Monumental Creek Road (FR # 375) was damaged during storm events sometime prior to August 22, 2003. Monumental Creek, which parallels the road, undercut the road after heavy rains increased streamflows. This resulted in road failures at six sites along a two mile section of road. Monumental Creek Road and a portion of the road fill were washed away at each location. The PNF initiated emergency consultation for repair of this section of road because: (1) It posed a public safety hazard; (2) it was susceptible to continued erosion and delivery of sediment to Monumental Creek; (3) it's loss would represent a loss of the PNF=s road investment; and (4) it provides the only motorized access to private property on Thunder Mountain. The Federal action encompasses activities related to emergency repairs performed on the Monumental Road, FR # 375 from September 5-7, 2003.

Six road segments were repaired under the emergency action, the specifics of which have been summarized below in Table 1. The road repair treatments were essentially the same at each site; re-sloping the eroded fill slope, which was essentially vertical after the damage, by pulling material back toward the remaining road surface, and placing riprap to stabilize and reestablish the slope and road surface. Work was conducted from the road prism; no instream work with heavy machinery occurred.

Prior to the storm event and road repairs, the washed out road sections closely bordered the stream with the road fill essentially forming the streambank. The road repairs resulted in a similar situation, with encroachment on the stream channel estimated by the PNF to be no greater than it had been prior to the storm washing out the road. Instream habitat was filled in two instances. At one site, riprap had to be placed in a newly formed side channel to stabilize the road and, at another site, a small pool was filled.

Table 1. Monumental Creek Road Emergency Road Repair Site Locations and Dimensions.

Site #	Milepost	Size of Failure (L x W x H)	Volume Fill Lost (cu. yds.)	Repair Volume (cu. yds.)
1	11.5	150 x 8 x 6	268	264
2	10.4	30 x 8 x 6	54	90
4,3	10.1	45 x 3 x 4	21	24
5	9.9	60 x 6 x 5	67	120
6	9.8	20 x 7 x 30	160	180
			570	***678***

Borrow material for riprap was obtained from a local talus slope near the road failure locations. The site was adjacent to the road and somewhat within the road prism. Approximately 680 cubic yards of rock were taken to repair the six sites.

A fish biologist was on site for the entire three days of road repairs. Work at each site was not initiated until all reasonable measures were taken to remove fish from the stream adjacent to the repair sites. Seining, dip-netting, isolation of fish using blocknets, and electroshocking were used to remove fish from the influences of the repair work. In one instance of electroshocking, three mortalities of young-of-the-year (YOY) cutthroat or redband trout/steelhead occurred. The following mitigation measures were applied to the emergency action:

- Conducted bull trout spawning surveys before repairs commenced to determine presence/absence of spawning fish or redds, and/or location of nearest spawning fish/redd;

- Snorkeled specific repair areas to determine presence/absence and distribution/ approximate abundance of ESA-listed fish species;

- Prior to any instream disturbance, gently displaced fish within occupied specific repair or diversion areas in the stream channel. Scattered fish by electrofishing or while walking through the stream, and dispersed fish to adjacent non-repair areas within the stream;

- Placed block nets within the stream channel upstream and downstream of the specific repair areas to prevent movement of displaced fish back into repair areas. Removed block nets after repair was complete;

- Placed the largest, cleanest, sorted riprap material available adjacent to the wetted stream channel. Used a backhoe to permit sorting of material to obtain the largest, cleanest material possible. Where feasible, used placement techniques rather than dumping;

- Did not allow heavy equipment within the stream channel;

- When fill material/riprap was being placed into a section of stream channel occupied by a ESA-listed fish species, a fish biologist was on site. Road crew and fish biologists coordinated schedules so that a fish biologist was present during repair of these areas; and

- Applicable mitigation included in 2001 Ongoing Road Management BA was followed.

1.3 Description of the Action Area

An action area is defined by the Services= regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The actions discussed in this Opinion involve two action areas, both of which have been described below:

1.3.1 Marble Fire

The action area affected by emergency actions includes Big Creek mainstem from the Lick Creek ford downstream to Big Creek's confluence with Monumental Creek, a distance of approximately 15 stream miles. The Marble Fire emergency action area also encompasses the lower reach of Smith Creek and McCorkle Creek, and side-channel habitats of Big Creek near the town of Edwardsburg (5^{th} code HUC #1706020615). These stream reaches serve as migratory corridors, and provide spawning and rearing habitat for EFH and the anadromous salmonid Evolutionarily Significant Units (ESUs) listed below in Table 2.

1.3.2 Monumental Road Repair

The action area affected by the emergency action includes Monumental Creek mainstem from the uppermost construction site downstream to it=s entrance into Roosevelt Lake, a distance of approximately three stream miles (5^{th} code HUC #1706020613). This area serves as potential spawning and/or rearing habitat for EFH and the anadromous salmonid ESUs listed in Table 2.

2. ENDANGERED SPECIES ACT - BIOLOGICAL OPINION

The objective of this Opinion is to determine whether the implementation of the Marble Fire suppression and Monumental Road Repair emergency actions are likely to jeopardize the continued existence of Snake River steelhead and spring/summer chinook salmon, or destroy or adversely modify designated critical habitat for Snake River spring/summer chinook salmon.

2.1 Evaluating the Effects of the Emergency Actions

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA. In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations and when appropriate[1] combines them with *The Habitat Approach* (National Marine Fisheries Service [NMFS] 1999): (1) Consider the biological requirements and status of the listed species; (2) evaluate the relevance of the environmental baseline in the action area to the species= current status; (3) determine the effects of the action(s) on the species, and whether the action(s) is consistent with any available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the action, the effects of the environmental baseline, any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action(s) under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat. If jeopardy or adverse modifications are found, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy and/or destruction or adverse modification of critical habitat. For the emergency actions, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action.

The fourth step above (jeopardy/adverse modification analysis) requires a two-part analysis. The first part focuses on the action area and defines the action=s effects in terms of the species= biological requirements in that area (i.e., effects on essential features). The second part focuses on the species itself. It describes the action=s effects on individual fish, populations, or both, and places that impact in the context of the ESU as a whole. Ultimately, the analysis seeks to determine whether the action(s) is likely to jeopardize a listed species= continued existence or destroy or adversely modify its critical habitat.

2.1.1 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Biological requirements are population characteristics necessary for the listed ESUs to survive and recover to naturally reproducing population sizes at which protection under the ESA would become unnecessary. The listed species' biological requirements may be described as characteristics of the habitat, population

[1] The Habitat Approach is intended to provide guidance to NOAA Fisheries staff for conducting analyses, and to explain the analytical process to interested readers. As appropriate, the Habitat Approach may be integrated into the body of Opinions. NOAA staff are encouraged to share the Habitat Approach document with colleagues from other agencies and private entities who are interested in the premises and analysis methods.

or both (McElhany *et al*. 2000). See Table 2 for a listing of interim recovery targets established by NOAA Fisheries for ESA-listed fish species potentially affected by the emergency actions (NMFS 2002). Interim recovery targets are also available at the following website:

http://www.nwr.noaa.gov/1habcon/habweb/habguide/appendix_b.pdf

Table 2. Interim Recovery Targets Established for ESA-listed Fish Species under NOAA Fisheries Jurisdiction (NMFS 2002).

ESU/Spawning Aggregation	Interim Recovery Target
Snake River Spring/summer Chinook Salmon	41,900
Snake River Steelhead	53,700

For actions that affect freshwater habitat, NOAA Fisheries may describe the habitat portion of a species= biological requirements in terms of a concept called properly functioning condition (PFC). The PFC is defined as the sustained presence of natural[2] habitat-forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation (NMFS 1999). The PFC, then, constitutes the habitat component of a species' biological requirements. Although NOAA Fisheries is not required to use a particular procedure to describe biological requirements, it typically considers the status of habitat variables in a matrix of pathways and indicators (MPI) (NMFS 1996, Table 1) that were developed to describe PFC in forested montane watersheds. In the PFC framework, baseline environmental conditions are described as "properly functioning," "functioning at risk," or "not properly functioning."

The Marble Fire Suppression and Monumental Creek Road Repair emergency actions occurred within designated critical habitat for this spring/summer chinook salmon ESU. Freshwater critical habitat can include all waterways, substrates, and adjacent riparian areas[3] below longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and dams that block access to former habitat (see citations in Table 3).

Essential features of critical habitat for the listed species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. All of these essential features of critical habitat are included in a NMFS (1996) analysis framework called *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale*. The PNF

[2] The word Anatural@ in this definition is not intended to imply Apristine,@ nor does the best available science lead us to believe that only pristine wilderness will support salmon.

[3] Riparian areas adjacent to a stream provide the following functions: shade, sediment delivery/filtering, nutrient or chemical regulation, streambank stability, and input of large woody debris and fine organic matter.

used a modified version of this Matrix (Southwest Idaho Ecogroup [SWIE] Matrix) (USDA Forest Service 2003, Appendix B) to evaluate the environmental baseline condition, and effects of the action on essential habitat features for affected ESA-listed fish species (discussed in more detail in Section 2.2).

2.1.2. Status and Generalized Life History of Listed Species

In this step, NOAA Fisheries also considers the current status of the listed species within the action area, taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species and also considers any new data that is relevant to the species' status. Please refer to Appendix A of the following website for the general life history of the listed species:

http://www.nwr.noaa.gov/1habcon/habweb/habguide/appendix_a_june2001.pdf

The PNF found that the emergency actions were likely to adversely affect the ESA-listed species and designated critical habitat identified below in Table 3. Based on the life histories of these ESUs, it is likely that juvenile steelhead, steelhead eggs, and juvenile and adult life stages of spring/summer chinook salmon were likely adversely affected by the emergency actions as implemented.

Table 3. References for Additional Background on Listing Status, Protective Regulations, and Life History for the ESA-Listed Species Considered in this Consultation.

Species ESU	Status	Critical Habitat Designation	Protective Regulations	Life History
Chinook salmon (*O. tshawytscha*)				
Snake River Spring/summer	Threatened; April 22, 1992; 57 FR 14653	October 25, 1999, 64 FR 57399[4]	July 10, 2000; 65 FR 42422	Matthews and Waples 1991; Healey 1991
Steelhead (*O. mykiss*)				
Snake River Basin	Threatened; August 18, 1997; 62 FR 43937	N/A	July 10, 2000; 65 FR 42422	Busby et al. 1996

[4] This corrects the original designation of December 28, 1993, 58 FR 68543 by excluding areas above Napias Creek Falls, a naturally impassable barrier.

2.1.2.1 Snake River Spring/summer Chinook Salmon

The Snake River spring/summer chinook salmon ESU, listed as threatened on April 22, 1992,(67 FR 14653), includes all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, and Salmon Rivers. Some or all of the fish returning to several hatchery programs are also listed, including those returning to the Tucannon River, Imnaha, and Grande Ronde hatcheries, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River.

Historically, the Snake River drainage is thought to have produced more than 1.5 million adult spring/summer chinook salmon in some years during the late 1800s (Matthews and Waples 1991). By the 1950s the abundance of spring/summer chinook had declined to an annual average of 125,000 adults. Adult returns counted at Lower Granite Dam reached all-time lows in the mid-1990s (< 8,000 adult returns), but numbers have begun to increase since 1997. Habitat degradation is common in the range of this ESU. Spawning and rearing habitats are likely impaired by factors such as tilling, water withdrawals, timber harvest, grazing, mining, and alteration of floodplains and riparian vegetation. Mainstem Columbia and Snake River hydroelectric developments have altered flow regimes and estuarine habitat, and disrupted migration corridors. Competition between natural indigenous stocks of spring/summer chinook salmon and spring/summer chinook salmon of hatchery origin has likely increased due to an increasing proportion of naturally-reproducing fish of hatchery origin.

Adult returns (hatchery and wild) counted at Lower Granite Dam reached all-time lows in 1994 and 1995 (3,915 and 1,797 respectively), after which, a modest increase occurred through 2000. Adult returns at Lower Granite Dam dramatically increased after 2000, with 185,693 adults returning in 2001, 97,184 in 2002, and 87,031 in 2003. The large increase in 2001 was comprised of mostly hatchery fish, with only 10% of the returns from fish of natural origin. However, returns of natural-origin adult spring/summer chinook salmon at Lower Granite Dam in 2001 were 3.5 times the 1979-2002 average, and more than twice this average in 2002 (Fish Passage Center 2004).

The median population growth rate (lambda) was used by McClure et al. (2000) to indicate whether listed populations are increasing (lambda > 1) in numbers or decreasing (lambda < 1). NOAA Fisheries estimates that lambda for the Snake River spring/summer chinook ESU as a whole, from 1980-1997, ranges from 0.96, assuming no reproduction by hatchery fish in the wild, to 0.80, assuming that hatchery fish reproduce in the river at the same rate as wild fish (Tables B-2a and B-2b in McClure et al. 2000). The proportion of hatchery fish in the Snake River spring/summer chinook population has been increasing with time; consequently, growth rates for the wild spring/summer chinook population are overestimated unless corrected for hatchery influence. The degree of hatchery influence is unknown. NOAA Fisheries estimated the risk of absolute extinction considering a range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (i.e., hatchery effectiveness = 0), the risk of absolute extinction within 100 years is 0.40 for Snake River chinook (Table B-5 in McClure et al. 2000). At the high end, assuming that the

hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years is 1.00 (Table B-6 in McClure et al. 2000).

As reported by the PNF (Wagoner and Burns 2001), spring/summer chinook salmon spawn throughout mainstem Big Creek, and are known to spawn and rear in Monumental Creek at least as far upstream as Roosevelt Lake (referenced one study reporting juvenile chinook salmon upstream from Roosevelt Lake). Current spring/summer chinook salmon use of Big Creek and its tributaries is considered depressed, averaging 10% of historic numbers. Redd counts in upper Big Creek have demonstrated a declining trend since 1957, ranging from two to 26 redds from 1994 to 2000, before increasing to 104 total redds in 2001 (Wagoner and Burns 2001; Wagoner et. al. 2004).

Adult migration for Big Creek spring/summer chinook salmon occurs from April to July. They typically move into Big Creek by July and spawn from August through September. Incubation and emergence timing ranges from August to April, with juveniles rearing for a year in Big Creek before emigrating as smolts from April to July.

2.1.2.2 Snake River Steelhead

The Snake River steelhead ESU, listed as threatened on August 18, 1997, (62 FR 43937), includes all natural-origin populations of steelhead in the Snake River basin of Southeast Washington, northeast Oregon, and Idaho. None of the hatchery stocks in the Snake River basin are listed, but several are included in the ESU. Critical habitat for Snake River steelhead was administratively withdrawn on April 30, 2002, and is not designated at this time.

Natural runs of Snake River steelhead have been declining in abundance over the past decades. Some of the significant factors in the declining populations are mortality associated with the many dams along the Columbia and Snake Rivers, losses from harvest, loss of access to more than 50% of their historic range, and degradation of habitat used for spawning and rearing. Possible genetic introgression from hatchery stocks is another threat to Snake River steelhead since wild fish comprise such a small proportion of the population. Additional information on the biology, status, and habitat elements for Snake River steelhead are described in Busby et al. (1996).

The 2001 to 2003 adult steelhead returns (hatchery and wild) at Lower Granite Dam represent the three highest counts on record, with 2001's 262,568 count representing the highest return in 26 years of record. Since 2001, counts have decreased to 218,718 in 2002, and 180,672 in 2003 (Fish Passage Center 2004). Although steelhead numbers have dramatically increased, wild steelhead comprises only 10% to 26% of the total returns since 1994. Consequently, the large increase in fish numbers does not reflect a change in steelhead status based on historic levels. Recent increases in the population are not expected to continue, and the long-term trend for this species indicates a decline.

Survival of downstream migrants in 2001 was the lowest since 1993. Low survival was due to record low water run-off, and elimination of spills from the Snake River dams to meet hydropower demands (Fish Passage Center 2001). Average downstream travel times for steelhead nearly doubled and were among the highest observed since recording began in 1996. Consequently, wide fluctuations in population numbers are expected over the next few years when adults from recent cohorts return to spawning areas. Detailed information on the current range-wide status of Snake River steelhead, under the environmental baseline, is described in the steelhead status review (Busby et al. 1996), status review update (BRT 1997), and the draft Clearwater Subbasin Summary (CBFWA 2001).

The median population growth rate (lambda) was used by McClure et al. (2000) to indicate whether listed populations are increasing (lambda > 1) in numbers or decreasing (lambda < 1). NOAA Fisheries estimates that the lambda for the Snake River steelhead ESU as a whole, from 1980-1997, ranges from 0.91, assuming no reproduction by hatchery fish in the wild, to 0.70, assuming that hatchery fish reproduce in the river at the same rate as wild fish (Tables B-2a and B-2b in McClure et al. 2000). The proportion of hatchery fish in the Snake River steelhead population has been increasing with time; consequently, growth rates for the wild steelhead population are overestimated unless corrected for hatchery influence. The degree of hatchery influence is unknown. NOAA Fisheries estimated the risk of absolute extinction for the A and B runs, considering a range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (i.e., hatchery effectiveness = 0), the risk of absolute extinction within 100 years is 0.01 for A run steelhead and 0.93 for B run fish (Table B-5 in McClure et al. 2000). At the high end, assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years is 1.00 for both runs (Table B-6 in McClure et al. 2000).

As reported by the PNF (Wagoner and Burns 2001), steelhead spawn and rear throughout mainstem Big Creek and its tributaries. In Big Creek, most of the available spawning habitat is found from Rush Creek to Cave Creek, near Bull Creek, Copper Camp, Beaver Creek, and from the Big Creek Guard Station to the confluence with Jacobs Ladder Creek. Steelhead are also known to spawn and rear in Monumental Creek, with optimal spawning areas found upstream to and beyond Roosevelt Lake. Monumental Creek reportedly supported the highest numbers of steelhead spawners in the Big Creek drainage during surveys in 1983, with densities higher than any other Middle Fork tributary from 1981 to 1983.

Based on steelhead elsewhere in the region, Big Creek steelhead are expected to spawn during April and May, with emergence occurring from July to mid-August.

2.1.3 Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed

Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). In step two, NOAA Fisheries' evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates essential features of designated critical habitat and the listed Pacific salmon ESUs affected by the proposed action.

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System (FCRPS). Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuation in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts= journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996, National Research Council 1996). Formerly complex mainstem habitats in the Columbia, Snake, and Willamette Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris (LWD) in these rivers has declined, reducing habitat complexity and altering the rivers= food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997).

To address problems inhibiting salmonid recovery in CRB tributaries, the Federal resource and land management agencies developed the *All H Strategy* (Federal Caucus 2000). Components of the *All H Strategy* commit these agencies to increased coordination and a fast start on protecting and restoring habitat for salmon and steelhead.

Stream channelization, road construction, mining, water withdrawals, outdoor recreation, fire exclusion, fish harvest, and introduction of non-native species have adversely affected listed species or their habitat in much of the Big Creek subbasin. A brief description of baseline conditions has been provided below for Big Creek and Monumental Creek.

2.1.3.1 Big Creek

Although a large portion of the Big Creek subbasin is designated wilderness, land management activities have affected stream conditions and essential habitat features for salmon and steelhead in the subbasin. The following summary of land management and current habitat conditions has been excerpted from Wagoner and Burns (2001), and Wagoner, Faurot, and Burns (2004).

Land management activities in the Big Creek subbasin include both historic and current mining activities, private summer residences, two outfitter lodges, several water diversions/hydropower sites, five airstrips, a USFS guard station, 6,000 acres of State/private land, 53 miles of USFS system road, and 400 miles of system trails. Livestock grazing has and continues to occur on private land and by pack/saddle stock in localized areas across the subbasin. Including the Monumental Creek watershed, the Big Creek subbasin includes 340,000 acres of wilderness.

Scattered mining disturbance in the upper Big Creek area dates back almost a century, including numerous placer and lode mining efforts. Sixteen mines have been identified in the Big Creek subbasin, occurring primarily in the Logan Creek and Smith Creek watersheds. Most of these were considered small operations (3-10 acres each), and are now abandoned with the exception of the Golden Hand, Velvet Quartz, Fourth of July, and Snowshoe Mines.

Environmental baseline conditions within the action area were evaluated for the emergency actions at the project level, watershed, and subbasin scales. The evaluation was based on the "matrix of pathways and indicators" (MPI; NMFS 1996) as modified for the SWIE. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the ESA-listed species.

Because such a large portion of the subbasin occurs within designated wilderness, overall habitat quality is generally considered near natural and pristine throughout much of Big Creek. However, concentrated disturbance associated with historic and current land use in the upper Big Creek watershed has led to functioning at risk classifications for the physical barrier, substrate embeddedness, pool frequency, and road density/location indicators within the project and action area associated with these emergency actions.

2.1.3.2 Monumental Creek

Monumental Creek is a large, perennial tributary to Big Creek. Mining activities have occurred on private property in the headwaters of Monumental Creek (Thunder Mountain) for over a century. Four mining operations have been located in the Monumental Creek watershed, including the 40-acre Dewey Mine, and the 235-acre Sunnyside Mine. The majority of habitat degradation in Monumental Creek has reportedly been related to these mining related activities.

Mallet (1974) identified detrimental conditions in Monumental Creek due to mining pollution and siltation. In 1981, activities at the Golden Reef Joint Venture Mine resulted in an influx of sediment pond wastewater into Monumental Creek and Mule Creek, a Monumental Creek tributary. In October 1983, several tons of settling pond sludge from the Dewey Mine spilled into Mule Creek. A fish habitat survey conducted by Idaho Department of Fish and Game (IDFG) and the USFS identified extremely turbid conditions, severely degraded fish habitat (50% less habitat as a result of the spill), and 51% embeddedness (twice the values found in undisturbed sites).

High flows in 1986 flushed fine sediments, reducing embeddedness to 19% in Monumental Creek downstream of the contaminant source in 1986. The PNF further documented an improving trend in substrate conditions, but identified sediment effluent as continuing to degrade habitat. More recently, Nelson et al. (1996) noted a highly significant decreasing trend in cobble embeddedness over the 1983-1994 study period. Generally, sediment conditions in the Thunder Mountain area appear stable, with trends in fine sediment generally improving. No clear-cut differences were found in present sediment conditions between sites in the Monumental Creek area and those in the Wilderness (Nelson et al. 1996).

Like Big Creek, the majority of the Monumental Creek watershed is located within designated wilderness. However, concentrated disturbance associated with historic and current land use has led to functioning at risk classifications for the water temperature, physical barrier, substrate embeddedness, off-channel habitat, refugia, floodplain connectivity, drainage network increase, road density/location, disturbance history, RCAs, disturbance history, and integration of species/habitat condition indicators for the watershed. Road development, some of which occurred adjacent to Monumental Creek, and clearing of vegetation for mining activities have been the primary contributors to these degraded conditions.

2.1.3.3 Summary

Although habitat is generally considered pristine in the Big Creek subbasin, the biological requirements of the listed species may not currently be met under the environmental baseline for portions of upper Big Creek and upper Monumental Creek. Conditions in the action area would therefore have to improve. Any further degradation of the baseline or delay in improvement of these conditions would probably further decrease the likelihood of survival and recovery of the listed species under the environmental baseline.

Pacific salmon populations also are substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Pacific salmon populations. Stochastic events in freshwater (flooding, drought, snowpack conditions, volcanic eruptions, etc.) can play an important role in a species' survival and recovery, but those effects tend to be localized compared to the effects associated with the ocean. The survival and recovery of these species depends on their ability to persist through periods of low natural survival due to ocean conditions, climatic conditions, and other conditions outside the action area. Freshwater survival is particularly important during these periods because enough smolts must be produced so that a sufficient number of adults can survive to complete their oceanic migration, return to spawn, and perpetuate the species. Therefore, it is important to maintain or restore essential features and PFC in order to sustain the ESUs through these periods. Additional details about the importance of freshwater survival to Pacific salmon populations can be found in Federal Caucus (2000), NMFS (2000), and Oregon Progress Board (2000).

2.2 Analysis of Effects

Effects of the action are defined as: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing the value of habitat for meeting the species= biological requirements or impairing the essential features of critical habitat. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or critical habitat of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 403.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

In step three of the jeopardy and adverse modification analysis, NOAA Fisheries evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery. In watersheds where critical habitat has been designated, NOAA Fisheries must make a separate determination of whether the action will result in the destruction or adverse modification of critical habitat (ESA, section 3, (3) and section 3(5A)).

NOAA Fisheries will consider any scientifically credible analytical framework for determining an activity's effect. In order to streamline the consultation process and to lead to more consistent effects determinations across agencies, NOAA Fisheries, where appropriate, recommends that action agencies use the MPI and procedures in NMFS (1996), particularly when their proposed action would take place in forested montane environments. NOAA Fisheries is working on similar procedures for other environments. Regardless of the analytical method used, if a proposed action is likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-

term progress of impaired habitat toward PFC, it cannot be found consistent with conserving the species.

For the streams typically considered in salmon habitat-related consultations, a watershed is a logical unit for analysis of potential effects of an action (particularly for actions that are large in scope or scale). Healthy salmonid populations use habitats throughout watersheds (Naiman *et al*. 1992), and riverine conditions reflect biological, geological and hydrological processes operating at the watershed level (Nehlsen 1997; Bisson *et al*. 1997; and NMFS 1999).

Although NOAA Fisheries prefers watershed-scale consultations due to greater efficiency in reviewing multiple actions, increased analytic ability, and the potential for more flexibility in management practices, often it must analyze effects at geographic areas smaller than a watershed or basin due to a proposed action=s scope or geographic scale. Analyses that are focused at the scale of the site or stream reach may not be able to discern whether the effects of the proposed action will contribute to or be compounded by the aggregate of watershed impacts. This loss of analytic ability typically should be offset by more risk averse proposed actions and ESA analysis in order to achieve parity of risk with the watershed approach (NMFS 1999).

The Marble Fire Suppression and Monumental Creek Road Repair BA provides an analysis of the effects of the emergency actions on ESA-listed anadromous fish species and their critical habitat in the action area. The analysis used the SWIE Matrix, the information included in the BA, and the best scientific and commercial data available to evaluate elements of the emergency actions that had the potential to affect the listed fish or essential features of their critical habitat. The PNF determined that both emergency actions were likely to adversely affect ESA-listed spring/summer chinook salmon and steelhead, and also adversely affect designated spring/ summer chinook salmon critical habitat. A discussion of effects follows for each emergency action.

2.2.1. Marble Fire Suppression

Using the SWIE Matrix, the PNF determined that effects from the Marble Fire Suppression likely occurred to the water quality, habitat elements, channel condition/dynamics, and watershed condition Matrix pathways. Except for the LWD watershed condition indicator (WCI), effects to these major pathways were reported to be negligible and temporary in nature. Fuel reduction efforts around the spike camp and the town of Edwardsburg resulted in a short- to long-term degrade to LWD recruitment potential.

2.2.1.1 Wildland Fire Situation Analysis Fish Biologist Involvement

The involvement of a fish biologist during formulation of the WFSA was identified as a requirement in the Wildland Fire Suppression Activities programmatic consultation (Wagoner and Burns 2001). This

requirement was included in the 2001 consultation as a preventative measure to help reduce the likelihood of adverse effects occurring to ESA-listed fish species during fire suppression efforts. The failure of the PNF to involve a fishery biologist during the WFSA development did not, in and of itself, directly lead to take of ESA-listed fish species or adverse effects to their habitat. However, this failure may have resulted in take or adverse impacts to their habitat from suppression-related activities that may have otherwise been further minimized or completely avoided had this early coordination occurred. A discussion of these potential effects is discussed below.

2.2.1.2 Vegetation Clearing/Thinning

Clearing of vegetation has the potential to affect both instream habitat and water quality by decreasing LWD recruitment and/or nutrient delivery to the stream, or by increasing water temperatures, turbidity, and instream sediment levels (Spence et al. 1996). Clearing of riparian vegetation can affect water quality by reducing stream shade and increasing direct solar radiation to the stream, both of which may result in increased stream temperatures. It can also result in reduced habitat quality through reductions in LWD recruitment potential which potentially results in a corresponding reduction in habitat complexity and pool frequency. Vegetation clearing can further affect water quality by triggering increased surface erosion which could result in increased suspended and/or instream sediment levels. Turbidity and fine sediments can reduce prey detection, alter trophic levels, reduce substrate oxygen, smother redds, and damage gills, among other deleterious effects (Bjornn 1991; Spence et al. 1996).

One ¼-acre helispot and 0.4-mile of fireline were constructed during fire suppression efforts. Vegetation clearing took place on McFadden Ridge with no clearing occurring within RCAs. The 0.4-mile of fireline was waterbarred following suppression activities. Fireline construction, through disturbance of riparian vegetation, has the potential to result in decreased shade, increased water temperatures, increased sediment/ turbidity, and decreased streambank stability. However, the small amount of vegetation disturbed, combined with rehabilitation efforts, and the isolation of clearing activities to the ridge and outside RCAs, leads NOAA Fisheries to conclude that potential for effects to water quality in Big Creek are expected to be minimal from these activities.

To reduce fuel loads around the spike camp and the town of Edwardsburg, safety snags, lodgepole pine (1- to 8-inches dbh), lower limbs of larger trees, and brush were felled by chainsaw and chipped during fire suppression activities. A 15-foot spacing between stems was the objective for thinning efforts in lodgepole pine stands. Although thinning did occur in the RCAs of lower Smith Creek and McCorkle Creek, no thinning occurred between Smith Creek road and Smith Creek, or within 60-feet of McCorkle Creek. Thinning also occurred within Big Creek RCAs on private property at the spike camp. Considering the 15-foot spacing, in combination with the buffers applied, NOAA Fisheries agrees with the PNF determination that streamside shade is not likely to be affected by the fuel reduction activities. However, these activities have likely resulted in at least a short-term decrease in LWD recruitment potential for the lower reaches of Smith and McCorkle Creeks, and for mainstem Big

Creek in the vicinity of the spike camp. In consideration of the buffers applied, the small diameter of the trees thinned, the spacing, the small treatment area, and the functioning appropriately baseline condition of the LWD WCI, effects to fish habitat should be localized to individual stream reaches in the upper Big Creek watershed, not degrading the indicators at the watershed scale, and only realized in the short-term (10-15 year) as the thinned trees replace themselves. Consequently, NOAA Fisheries believes that effects to instream habitat conditions should be minimal as a result of fuel reduction activities.

2.2.1.3 Spike Camp

Location of a portion of the five acre spike camp in the Big Creek RCA may have resulted in incidental take or disturbance of Snake River spring/summer chinook salmon or steelhead. The placement of 33 tents within the Big Creek RCA concentrated use in the RCA and increased the potential for crews to harass holding/spawning spring/summer chinook salmon and/or destroy redds. Although no physical signing was erected that instructed crews not to disturb holding/spawning salmon, crews were briefed daily and given direction in the Daily Incident Action Plan to not harass chinook salmon. Only one redd was found in the vicinity of the spike camp, located approximately 75-feet downstream from the crossing at the spike camp. No harassment of ESA-listed fish species or disturbance of chinook salmon redds was reported or expected to have occurred as a result of locating the spike camp in this area.

2.2.1.4 Helicopter Dipping

Helicopter bucket dipping from beaver ponds bordering Big Creek may have resulted in incidental take of Snake River spring/summer chinook salmon or steelhead. Dipping in the vicinity of migrating, holding, or spawning spring/summer chinook salmon could disrupt spawning behavior by disturbing fish, causing increased energy expenditure, and/or by causing salmon to move off redds. Although unlikely, juvenile chinook salmon and/or steelhead could potentially be dipped from the stream and killed when water is dumped on the fire. However, because of the PNF implemented minimization/avoidance recommendations provided by NOAA Fisheries for dipping activities, conducted snorkel surveys during suppression activities which found only brook trout (*Salvelinus fontinalis*) in the beaver ponds, and this side-channel habitat not providing habitat suitable for spring/summer chinook spawning, NOAA Fisheries believes that no incidental take of Snake River spring/summer chinook or steelhead occurred related to this activity.

2.2.1.5 Vehicle Fording

Stream fording can adversely affect salmonids and their habitat in a variety of ways. Fords can directly affect instream habitat conditions by degrading streambanks and providing a chronic source of sediment input that is directly routed to the stream network. When in use, fords temporarily degrade water quality by increasing turbidity and potentially contributing petroleum residue from vehicles as they cross

stream. Fording vehicles can also directly displace holding, migrating, and rearing salmonids. It may also compact spawning gravels and potentially destroy incubating redds.

On August 14 and 15, 2003, two vehicles associated with the fire suppression effort forded mainstem Big Creek at the crossing located on private land near the spike camp. Although no spring/summer chinook salmon redds were identified directly in the ford, one redd was identified approximately 75-feet downstream from the ford. Adult spring/summer chinook salmon were also known to be holding in the vicinity of and migrating by the ford at this time. Fording was terminated at this stream crossing by resource advisors following the two crossings to protect migrating fish and their redds. As reported in the BA, there was no evidence that the redd had been disturbed by the stream crossings. It is not possible to determine if sediment suspended as a result of the fording settled out downstream and affected survival in the redd, but based on the limited number of crossings occurring during the suppression effort, adverse effects to the redd are expected to have been minimal.

2.2.2 Monumental Creek Road Repair

Using the SWIE Matrix, the PNF determined that the Monumental Creek Road Repair likely affected the water quality, habitat elements, channel condition/dynamics, flow/hydrology, and watershed condition Matrix pathways. Except for the off-channel habitat WCI, effects to these major pathways were expected to be negligible and temporary in nature.

Six segments of the Monumental Creek Road were repaired under this emergency action, which included placing an estimated 678 cubic yards of riprap along 305-feet of Monumental Creek streambank (see Table 1). Without repair, the Monumental Creek Road would have continued to erode and continued to degrade instream habitat conditions from fine sediment input. Electrofishing to remove fish from the work area prior to completing bank stabilization resulted in the known mortality of three YOY cutthroat or redband trout/steelhead.

2.2.2.1 Water Quality

Construction activities associated with the excavation and armoring of these road segments likely mobilized sediments and temporarily increased downstream turbidity levels in Monumental Creek. Around the construction area (within several hundred feet), the level of turbidity likely exceeded ambient levels by a substantial margin and potentially affected ESA-listed fish species present downstream. Bank stabilization likely delivered temporary pulses (minutes to hours) of sediment downstream. Quantifying turbidity levels and their effect on fish species and their habitat is complicated by several factors. First, turbidity from an activity will typically decrease as distance from the activity increases. How quickly these levels attenuate depends on the quantity of material in suspension (*e.g.*, mass or volume), particle size, the amount and velocity of ambient water (dilution factor), and the physical/chemical properties of the sediments. Second, the impact of turbidity on fish is not only related

to the turbidity levels but also to the particle size of the suspended sediments.

For salmonids, turbidity has been linked to a number of behavioral and physiological responses (*i.e*., gill flaring, coughing, avoidance, increase in blood sugar levels) which indicate some level of stress (Bisson and Bilby 1982; Berg and Northcote 1985; Servizi and Martens 1987). The magnitude of these stress responses are generally higher when turbidity is increased and particle size decreased (Bisson and Bilby 1982; Servizi and Martens 1987; Gregory and Northcote 1993). Although turbidity may cause stress, it has been shown that moderate levels of turbidity (35-150 nephelometric turbidity units) accelerate foraging rates among juvenile chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect).

Increased turbidity was likely short-lived and highly localized because of the short work window (two days) and low flow conditions for the emergency action. The project included measures to reduce or avoid turbidity impacts, including working from the road prism, using the largest, cleanest material possible for riprap, and removal of fish species from the project area prior to project commencement. Fish present downstream from the construction area, but within the action area, were likely able to avoid or reduce their exposure to turbidity by swimming to adjacent, less turbid habitat.

2.2.2.2 Habitat Effects

The pre-project presence of the road had already led to degraded habitat conditions in this segment of Monumental Creek. The presence of this valley bottom road had already confined the stream, preventing natural channel meandering and floodplain interaction processes, precluding future sources of LWD and detrital inputs, and affecting the composition, rate of accretion and scour of riverine substrates. The Monumental Creek Road was already contributing to reduced refugia and foraging habitat for rearing juvenile fish, and reduced fish habitat complexity.

Changes in bank structure from the addition of hard surfaces such as riprap can directly affect channel conditions and dynamics. Hard structures can adequately armor streambanks at a single site, but simultaneously destroy or degrade other bankline features. By design, the hardening measure transfers and focuses hydraulic energy to other stream segments downstream. With certain hardening treatments, nearshore topography is scoured, critical fish habitats can be degraded or destroyed, terrestrial/riparian habitat can be lost, and erosion of downstream streambank can be accelerated (Washington Department of Fish and Wildlife [WDFW] et. al.2002).

Although estimated to generally replace road fill material scoured away by the storm event, placement of riprap along the 305-feet of Monumental Creek will continue to artificially harden streambanks in the project area. As reported by WDFW et al. (2002), juvenile life stages of salmonids are especially affected by bank stabilization projects. In low flows, juveniles depend on cover provided by undercut banks and overhanging vegetation to provide locations for resting, feeding, and protection from

predation. During periods of high streamflow, juveniles often seek refuge in low velocity microhabitats, including undercut banks and off-channel habitat. Bank stabilization structures may preclude the future development of new off-channel rearing habitats by fixing the channel in its current location.

As reported in the BA, riprap placement was primarily limited to the road prism's existing alignment pre-storm, resulting in minimal channel encroachment. However, approximately 75- to 100-feet of newly formed side channel habitat was covered by riprap at Site #1 during construction activities. Since this off-channel habitat was formed only when the existing road prism washed away, providing a low gradient riffle with little habitat complexity, it likely provided only marginal refugia habitat. Thus, the loss of off-channel refugia habitat for juvenile listed fish species as a result of this emergency action is considered to have been minimal.

NOAA Fisheries expects the placement of riprap at or below the ordinary high water mark would likely, during high flow or flood events, transfer the energy of those high flows downstream. This could exacerbate downstream streambank erosion. If so, constructing additional artificial bank hardening structures could repeat the stream channel scenario described above, and continue to prevent or hinder the future attainment of properly functioning aquatic habitat conditions for ESA-listed fish species in Monumental Creek. A monitoring plan should be considered to track potential effects of this project to bank stability downstream from the project area.

Salmonid spawning habitats are created by and depend on channel characteristics and complexities that cause hydraulic sorting and gravel accumulation into suitable spawning beds. If well established, these beds are relatively resistant to scour during periods of egg incubation. Hardening of streambanks can cause a shift of the thalweg, scour of gravel accumulations, and the creation of uniform channel beds that eliminate spawning habitat (WDFW 2002). It is not known if habitat present in the project area provides suitable spawning habitat for ESA-listed fish species. However, when considering the small amount of habitat disturbed versus that available in the more than 20-miles of Monumental Creek, the majority of which is within designated wilderness, effects to salmonid spawning habitat are considered to have been negligible.

2.2.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future state or private activities, not involving Federal activities, which are reasonably certain to occur within the action area of the Federal action subject to consultation." These activities within the action area also have the potential to adversely affect the listed species and critical habitat. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes. Federal actions that have already undergone section 7 consultations have been added to the description of the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules or policy initiatives. Government and private actions may encompass changes in land and water uses including ownership and intensity any of which could adversely affect listed species or their habitat. Government actions are subject to political, legislative, and fiscal uncertainties.

Changes in the economy have occurred in the last 15 years, and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater overall and localized demands for electricity, water, and buildable land in the action area; will affect water quality directly and indirectly; and will increase the need for transportation, communication, and other infrastructure. The impacts associated with these economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect will likely be negative, unless carefully planned for and mitigated.

The Idaho Department of Environmental Quality will establish Total Maximum Daily Loads (TMDLs) in the Snake River Basin, a program regarded as having positive water quality effects. The TMDLs are required by court order, so it is reasonably certain that they will be set. The State of Idaho has created an Office of Species Conservation to work on subbasin planning and to coordinate the efforts of all state offices addressing natural resource issues. Demands for Idaho's groundwater resources have caused groundwater levels to drop and reduced flow in springs for which there are senior water rights. The Idaho Department of Water Resources has begun studies and promulgated rules that address water right conflicts and demands on a limited resource. The studies have identified aquifer recharge as a mitigation measure with the potential to affect the quantity of water in certain streams, particularly those essential to listed fish species.

For the purposes of this analysis, the majority of the action area is under PNF administration and included within the Frank Church River of No Return Wilderness. The town of Edwardsburg is also located in the action area, which includes a segment of private land bordering mainstem Big Creek, and the lower reaches of Smith Creek and McCorkle Creek. The BA did not identify, and NOAA Fisheries is unaware of forseeable future non-Federal activities in the action area which would alter the environmental baseline.

2.2.4 Consistency with Listed Species ESA Recovery Strategies

Recovery is defined by NMFS regulations (50 CFR 402) as an "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act." Recovery planning is underway for listed Pacific salmon in the Northwest with technical recovery teams identified for each domain. Recovery planning will help identify measures to conserve listed species and increase the survival of each life stage. NOAA Fisheries also intends that recovery planning identify the areas/stocks most critical to species conservation and recovery and thereby evaluate proposed actions on the basis of their effects on those areas/stocks.

Until the species-specific recovery plans are developed, the FCRPS Opinion and the related December 2000 *Memorandum of Understanding Among Federal Agencies Concerning the Conservation of Threatened and Endangered Fish Species in the Columbia River Basin* (together these are referred to as the Basinwide Salmon Recovery Strategy) (Federal Caucus 2000) provides the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute.

The USFS has specific commitments to uphold under the Basinwide Salmon Recovery Strategy (Federal Caucus 2000). Commitments which are pertinent to the emergency actions include the following:

1. Ensure that land managers consider the broad landscape context of site-specific decisions on management activities by requiring a hierarchically-linked approach to analysis at different geographical scales. This is important to ensuring that the type, location and sequencing of activities within a watershed are appropriate and done in the context of cumulative effects and broad-scale issues, risks, opportunities and conditions; and

2. Consult with the Services on land management plans and actions that may affect listed fish species following the Streamlined Consultation Procedures for Section 7 of the ESA, July 1999.

Application of the SWIE matrix at multiple geographical scales (4th, 5th, and 6th HUC scales) addressed using a hierarchical approach to analyze the emergency actions. Section 7 consultation also took place according to the streamlining procedures. Therefore, NOAA Fisheries has determined that the emergency actions were implemented consistent with the specific commitments of the Basin-wide Salmon Recovery Strategy.

2.3 Conclusions

The final step in NOAA Fisheries' approach to determine jeopardy is to determine whether the proposed action is likely to appreciably reduce the likelihood of species survival or recovery in the wild. After reviewing the current status of Snake River steelhead, Snake River spring/summer chinook salmon, and best available information concerning the potential effects of the Marble Fire Suppression and Monumental Creek Road Repair emergency action, NOAA Fisheries concludes that implementation of these emergency actions are not likely to jeopardize the continued existence of the Snake River steelhead, Snake River spring/summer chinook salmon, and are not likely to adversely modify Snake River spring/summer chinook salmon designated critical habitat.

For the Marble Fire Suppression action, NOAA Fisheries believes that helicopter dipping, stream fording in Big Creek, and thinning of riparian vegetation near Big Creek, Smith Creek, and McCorkle Creek are likely to have resulted in some level of habitat modification, harassment, or incidental take of Snake River spring/summer chinook salmon and steelhead. However, the level of potential mortality would be expected to be minimal and would not result in jeopardy. These conclusions are based on the following considerations: (1) application of avoidance/minimization measures provided by NOAA Fisheries after initiation of emergency consultation; (2) the small treatment area; (3) the spacing and small diameter class of trees thinned; (4) the buffers applied; (5) the functioning appropriately baseline for LWD and RCAs in the upper Big Creek watershed; (6) the daily briefings of fire personnel to not harass chinook salmon; (7) the snorkel surveys in helicopter dipping area which found only brook trout; and (8) the limited number of stream crossings at the ford.

For the Monumental Road Repair emergency action, NOAA Fisheries believes that disturbance related to construction activities, streambank hardening, and fish removal methods also resulted in some level of incidental take of these listed fish species. Three YOY salmonids were killed during fish relocation efforts and are assumed, for this analysis, to have been juvenile steelhead. However, any additional level of mortality would be expected to be minimal and would not result in jeopardy. These conclusions are based on the following considerations: (1) application of avoidance/minimization measures discussed during initiation of emergency consultation; (2) the short time in which the project was completed; (3) the small percentage of habitat affected versus that available in the Monumental Creek watershed; (4) the use of large, clean riprap; (5) the presence of a fish biologist on location throughout construction; (6) the efforts to isolate fish from the work area; and (7) the implementation of specific best management practices to avoid inwater work and minimize turbidity.

2.4 Conservation Recommendations

Conservation recommendations are defined as "discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information" (50 CFR 402.02). Section 7 (a)(1) of the ESA directs Federal agencies to use their

authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The conservation recommendation listed below is consistent with these obligations, and therefore should be implemented by the PNF.

1. The PNF should institute a process to better ensure that fish biologists participate in future WFSA formulation to ensure adverse effects are adequately avoided or minimized, also to ensure compliance with ongoing programmatic consultations with the Services.

2. The PNF should consider developing a short-term monitoring strategy to ensure that streambank stability does not become a problem in upper Monumental Creek as a result of riprap placement.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or critical habitat, NOAA Fisheries requests notification of the achievement of any conservation recommendations when the action agency submits its monitoring report describing action under this Opinion or when the project is completed.

2.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In these instances of emergency consultation, reinitiation is only likely to occur related to new information revealing effects not previously considered.

2.6 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is

defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

Incidental take is defined as "any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" [50 CFR 17.3]. The ESA at section 7(o)(2) removes the prohibition from incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.6.1 Amount or Extent of Take

NOAA Fisheries expects that the emergency actions are reasonably certain to have resulted in incidental take of ESA-listed Snake River spring/summer chinook salmon and steelhead because: (1) the listed species are known to occur in the action area; (2) detrimental effects to fish habitat from streambank hardening and increased turbidity/instream sediment levels; (3) stream fording upstream from established redds; (4) fish sampling/removal techniques. Effects such as minor sedimentation and minor riparian disturbance are unquantifiable in the short-term and are not expected to be measurable as long-term harm to habitat features or to salmonid behavior or population levels. Therefore, even though NOAA Fisheries expects some low level incidental take to have occurred due to the emergency actions covered by this Opinion, best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take of individual fish or incubating eggs for these actions. Instead, the extent of take associated with the emergency actions is expected to have been limited to the following:

1. Aquatic and associated riparian habitats associated with emergency fire suppression actions; and

2. Monumental Creek, from the project area downstream to its confluence with Roosevelt Lake.

2.6.2 Effect of Take

In this Opinion, NOAA Fisheries determines that this level of anticipated take did not result in jeopardy to Snake River spring/summer chinook salmon or steelhead.

2.6.3 Recommendations Provided to Minimize Take

2.6.3.1 Marble Fire Suppression

On August 26, 2003, NOAA Fisheries provided a list of initial recommendations to the PNF to avoid/minimize potential effects to ESA-listed fish species during Marble Fire suppression activities. These recommendations included a summary of emergency consultation procedures as well as the following general recommendations:

1. The PNF shall continue to implement fire operating guidelines and mitigation measures as outlined in the 2001 Wildland Fire Suppression consultation, including PACFISH standards and guidelines, the 1998 LRMP steelhead Opinion, and shall follow Resource Advisor Guidelines as closely as possible.

2. Fireline Construction

    (a) Use historic line; existing skid trails, roads and trails; and natural features as fuel breaks whenever possible, reducing the need to clear additional habitat.

3. Water Quality, Pumps, and Stream Crossings

    (a) Limit the number or prevent additional stream crossings of Big Creek.

    (b) Consider constructing a bridge across Big Creek to allow equipment access to the other side.

4. Air Operations

    (a) In order to protect aquatic resources and species, retardant should be dropped no closer than 300-feet (horizontal) from all waterways.

    (b) Locate helibases, staging areas, helispots, and other centers for incident activities outside of RCAs. If the only suitable location for these activities are within RCAs, an exemption can be made following a review and recommendation by a resource advisor.

    (c) When available, apply fire retardants formulated to have low toxicity to aquatic organisms.

    (d) When using helibuckets to dip buckets from fish-bearing waterbodies:

(1) Use lakes rather than streams or rivers when possible.

(2) Dip water from the deepest part of the waterbody.

(3) Dip as far from shore or banks as possible.

(4) Use a short line to increase rotor-wash on the water surface when possible.

(5) Slap the water surface with the bucket before immersing the bucket.

(6) Fill the bucket from as near the surface as possible.

(7) Where dipping from natural waterbodies may have prolonged effects on fish, dip from the waterbody until portable water tanks can be filled by pumps, then dip from the tanks; avoid hardening locations where portable tanks are deployed, and select a location that minimizes riparian impacts.

(8) Utilize existing helispots and/or existing openings for helispot construction to minimize the amount of vegetation clearing required.

5. Fire Camps

(a) Fire camps (including spike camps), sites should be outside of RCAs whenever possible and employ sanitation measures for food and trash.

(b) Gray water from showers or other fire camp facilities should be hauled to and deposited in approved sewage disposal sites.

6. Resource Advisors

(a) Evaluate all phases of fire-suppression activities in terms of the potential for noxious weed introduction and/or spread. Prevention is the best strategy.

(b) In addition to recommending measures to minimize effects to sensitive resources, resource advisors should record the locations of:

(1) Hand and machine-built fireline.

(2) Highly impacted areas due to both fire and fire-suppression activities such as the construction of safety zones, spike camps, sanitation facilities, and landings.

(3) New or re-opened/re-constructed roads or trails.

(c) This information will be valuable for rehabilitation efforts and is a necessary component of the "after-the-fact" consultation in accordance with section 7(a)(2) of the ESA.

7. Fire Suppression and BAER

(a) Consider seeding, re-vegetation, directional falling of trees, etc., to minimize sediment delivery to streams and lakes.

(b) Roads, trails, fireline, and all stream crossings should be rehabilitated to pre-fire conditions with adequate drainage structures to prevent resource damage.

(c) Sites used for water dipping should also be restored, at a minimum, to their pre-fire condition.

(d) In cases where the pre-fire condition was degrading resources, habitat, or environmental conditions, these sites should be restored or at least stabilized to the extent practicable.

2.6.3.2 Monumental Creek Road Repair

On September 2, 2003, NOAA Fisheries approved a list of mitigation measures provided by the PNF to avoid/minimize potential effects to ESA-listed fish species during emergency road repair activities on the Monumental Creek Road. Mitigation measures agreed to included:

1. Work at each site would not be initiated until all reasonable measures were taken to remove fish from the stream adjacent to the repair sites. Seining, dip-netting, isolation of fish using block nets, and electroshocking were to be used to remove fish from the influences of the repair work;

2. Conduct bull trout spawning surveys before repairs commence to determine presence/ absence of spawning fish or redds, and/or location of nearest spawning fish/redd;

3. Snorkel specific repair areas to determine presence/absence and distribution/approximate abundance of listed species;

4. Prior to any instream disturbance, gently displace fish within occupied specific repair or diversion areas in the stream channel. Scatter fish by electrofishing or while walking through the stream, and disperse fish to adjacent non-repair areas within the stream. Place block nets within the stream channel upstream and downstream of the specific repair areas to prevent

movement of these displaced fish back into the repair areas. Remove block nets after repair is complete;

5. Place the largest, cleanest, sorted riprap material available adjacent to the wetted stream channel. Use a backhoe to permit sorting of material to obtain the largest, cleanest material possible. Where feasible, use placement techniques rather than dumping;

6. Do not allow heavy equipment within the stream channel;

7. When fill material/riprap is being placed into a section of stream channel occupied by a listed fish species, a fish biologist will be on site. Road crew and fish biologists will coordinate schedules so that a fish biologist can be present during repair of these areas; and

8. Applicable mitigation included in 2001 Ongoing Road Management BA will be followed.

2.6.4 Success in Implementing Recommendations

2.6.4.1 Marble Fire Suppression

With the exception of vegetation clearing for the construction of the helispot and the location of the spike camp in the RCA, NOAA Fisheries believes that all of the recommendations provided to the PNF to avoid/minimize adverse effects to listed fish species for fire suppression activities were successfully implemented. The effects of helispot construction, spike camp location, and other fire suppression activities associated with this action on ESA-listed anadromous fish were previously discussed in section 2.2.1 above.

2.6.4.2 Monumental Creek Road Repair

With the exception of the three mortalities of YOY salmonids during electrofishing efforts, NOAA Fisheries believes that all of the recommendations and mitigation measures to avoid/minimize adverse effects to listed fish species for the Monumental Creek Road Repair emergency action were successfully implemented. The effects of the electrofishing effort and other road repair activities associated with this action on ESA-listed anadromous fish were previously discussed in section 2.2.2 above.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Statutory Requirements

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan.

Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 305(b)(4)(A)).

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species**:** contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g*., loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The EFH consultation with NOAA Fisheries is required for any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the emergency actions may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fishery Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*)(PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Emergency Actions

The emergency actions and action areas are detailed above in Sections 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of Snake River spring/summer chinook salmon.

3.4 Effects of Emergency Actions on EFH

The habitat requirements for EFH-listed spring/summer chinook salmon have been evaluated and have been found to be the same as the habitat requirements for the ESA-listed species. As described in detail in Section 2.2 of this document, the emergency actions have resulted in temporary and short-term adverse effects on a variety of habitat parameters. These adverse effects are:

1. Effects of vegetation clearing and stream fording on Big Creek instream sediment levels, as described in Section 2.2.1 of this Opinion;

2. Effects of vegetation thinning and location of Marble Fire spike camp in the RCAs, as described in Section 2.2.1 of this Opinion; and

3. Effects of road stabilization efforts on Monumental Creek water quality and instream habitat conditions, as described in Section 2.2.2 of this Opinion.

Additional potential short- and long-term adverse effects on EFH, not fully addressed in Section 2.2.2, include:

4. Potential adverse effects to downstream streambank stability in Monumental Creek as a result of bank hardening activities.

3.5 Conclusion

NOAA Fisheries concludes that the emergency actions may adversely affect designated EFH for Snake River spring/summer chinook salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA and/or EFH Assessment have been implemented by the PNF, and believes that these measures were sufficient to minimize, to the maximum extent practicable, the potential EFH effects related to the emergency actions (EFH adverse affect #1-3). However, these conservation measures are not sufficient to fully address the remaining adverse effects to EFH (EFH adverse affect #4). Consequently, NOAA Fisheries recommends that the PNF implement the following conservation measures to minimize the potential adverse effects on EFH for Snake River spring/summer chinook salmon:

1. Implement conservation recommendation 2, as described in Sections 2.4 of this Opinion to minimize the potential for EFH adverse effect #4.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the emergency action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The PNF must reinitiate EFH consultation with NOAA Fisheries if the emergency actions are substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

4. REFERENCES

Berg, L., and T. G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. Canadian Journal of Fisheries and Aquatic Science 42: 1410-1417.

Bisson, P. A., and R. E. Bilby. 1982. Avoidance of suspended sediment by juvenile coho salmon. North American Journal Fisheries Management 4: 371-374.

Bisson, P. A., G. H. Reeves, R. E. Bilby and R. J. Naiman. 1997. Watershed Management and Pacific Salmon: Desired Future Conditions. P. 447-474. In: Stouder, D.J., P.A. Bisson, and R.J. Naiman, eds. Pacific Salmon and Their Ecosystems: Status and Future Options. Chapman and Hall, New York.

Bjornn, T.C. 1991. Spawning and Development. *The Wildlife Series: Trout.* Harrisburg, Pennsylvania. pp57-64.

BRT (Biological Review Team). 1997. Status review update for West Coast Steelhead from Washington, Idaho, Oregon, and California. National Marine Fisheries Service, West Coast Steelhead BRT, Portland, Oregon.

Busby, P. J. , T. C. Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F. W. Waknitz, and I. V. Lagomarsino. 1996. Status Review of West Coast Steelhead from Washington, Idaho, Oregon, and California. U.S. Department of Commerce. NOAA Technical Memorandum NOAA Fisheries-NWFSC-27.

CBFWA (Columbia Basin Fish and Wildlife Authority). 2001. Draft Clearwater Subbasin Summary. Submitted to the Northwest Power Planning Council, May 25, 2001.

Coutant, C.C. 1999. Perspectives on Temperature in the Pacific Northwest's Fresh Waters. Environmental Sciences Division Publication 4849 (ORNL/TM-1999/44), Oak Ridge National Laboratory, Oak Ridge, Tennessee. 108 p.

Federal Caucus. 2000. Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy. http://www.salmonrecovery.gov December.

Fish Passage Center. 2001. http://www.fpc.org/fpc_docs/200-01.pdf

Fish Passage Center. 2004. Fish Passage Center Smolt Data, Current and Historical, 2501 S.W. First Ave., Suite 230, Portland, Oregon. http://www.fpc.org/adult.html

Gregory, R. S., and T. S. Northcote. 1993. Surface, planktonic, and benthic foraging by juvenile chinook salmon (*Oncorhynchus tshawytscha*) in turbid laboratory conditions. Canadian Journal of Fisheries and Aquatic Sciences 50: 223-240.

Healey, M.C. 1991. Life history of chinook salmon (*Oncorhynchus tshawytscha*). In: Groot, C., and L. Margolis, eds. Pacific salmon life histories. Vancouver, B.C.: University of British Columbia Press: 311-393.

Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A. Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-successional Forests, Fisheries and Watersheds. National Forests East of the Cascade Crest, Oregon and Washington. A Report to the United States Congress and the President. The Wildlife Society, Bethesda, MD.

Independent Scientific Group. 1996. Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem. Northwest Power Planning Council. Portland, Oregon. 500p.

Lee, D. C., J. R. Sedell, B. E. Rieman, R. F. Thurow, and J. E. Williams. 1997. Broadscale Assessment of Aquatic Species and Habitats. Volume III, Chapter 4. U.S. For. Serv., Gen. Tech. Rep. PNW-GTR-405. Portland, Oregon.

Mallet, J. 1974. Inventory of Salmon and Steelhead Resources, Habitats, Use and Demands. Job Completion Report. Idaho Department of Fish and Game. Boise, Idaho.

Maser, Chris & James R. Sedell. 1994. From the Forest to the Sea: The Ecology of Wood in Streams, Rivers, Estuaries, and Oceans. St. Lucie Press, Delray Beach, Florida.

Matthews, G. M., and R. S. Waples. 1991. Status review for Snake River spring and summer chinook salmon. NOAA Fisheries, Northwest Fisheries Science Center, NOAA Technical Memorandum NMFS F/NWC-200, Seattle, Washington.

McClure, M. M., B. L. Sanderson, E. E. Holmes, and C. E. Jordan. 2000. A large-scale, multi-species risk assessment: anadromous salmonids in the CRB. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington. Submitted to Ecological Applications.

McElhany, P., M. Ruckleshaus, M. J. Ford, T. Wainwright, and E. Bjorkstedt. 2000. Viable Salmon Populations and the Recovery of Evolutionarily Significant Units. U. S. Dept. Commer., NOAA Technical Memorandum NMFS-NWFSC-42.

McIntosh, B.A., J.R. Sedell, J.E. Smith, R.C. Wissmar, S.E. Clarke, G.H. Reeves, and L.A. Brown. 1994. Management History of Eastside Ecosystems: Changes in Fish Habitat Over 50 Years, 1935 to 1992. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-321.

Naiman, R. J., T. J. Beechie, L. E. Benda, D. R. Berg, P. A. Bisson, L. H. MacDonald, M. D. O=Connor, P. L. Olson, and E. A. Steel. 1992. Fundamental Elements of Ecologically Healthy Watersheds in the Pacific Northwest Coastal Ecoregion. P. 127-188. In: R.S. Naiman, ed. Watershed Management **C** Balancing Sustainability and Environmental Change. Springer-Verlag, N.Y.

National Research Council. 1996. Upstream**C**Salmon and Society in the Pacific Northwest. National Academy Press, Washington, D.C.

Nehlsen, W. 1997. Prioritizing Watersheds in Oregon for Salmon Restoration. Restoration Ecology 5(4S):25-43.

Nelson, R.L., L. Wagoner, D.C. Burns, J. Lund and M. Faurot. 1996. Deposition of Fine Sediment in Tributaries of the Salmon River on the PNF and BNF, Idaho: Report of Fine Sediment Trends and Monitoring Efforts, 1966-1995; Trends in Cobble Embeddedness, Free Matrix Particles, and Surface Fines in Relation to Mining Areas in the East Fork South Fork Salmon River and Big Creek Watersheds. Payette National Forest, McCall, Idaho.

NMFS (National Marine Fisheries Service). 1996. Making Endangered Species Act Determinations of Effect for Individual and Grouped Actions at the Watershed Scale. Habitat Conservation Program, Portland, Oregon.

NMFS. 1999. The Habitat Approach. Implementation of Section 7 of the Endangered Species Act for Actions Affecting the Habitat of Pacific Anadromous Salmonids. Northwest Region, Habitat Conservation and Protected Resources Divisions, August 26.

NMFS. 2000. Biological Opinion: Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin. Hydro Program, Portland, Oregon (Issued December 21, 2000).

NMFS. 2002. April 4, 2002, Letter from Robert Lohn to Frank Cassidy, Northwest Power Planning Council Chairman, Re: Interim Abundance and Productivity Targets for Interior Columbia Basin Salmon and Steelhead Listed under the Endangered Species Act.

Oregon Progress Board. 2000. Oregon State of the Environment Report 2000. Oregon Progress Board, Salem, Oregon.

PFMC (Pacific Fishery Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and Identification of Essential Fish Habitat, Adverse Impacts and Recommended Conservation Measures for Salmon. Pacific Fishery Management Council, Portland, Oregon.

Rhodes, J.J., D.A. McCullough, and F.A. Espinosa, Jr. 1994. A Coarse Screening Process for Potential Application in ESA Consultations. Columbia River Intertribal Fish Commission. Prepared under NMFS/BIA Inter-Agency Agreement 40ABNF3. December.

Sedell, J.R. and J.L. Froggatt. 1984. Importance of Streamside Forests to Large Rivers: The Isolation of the Willamette River, Oregon, USA, from Its Floodplain by Snagging and Streamside Forest Removal. Internationale Vereinigung fur Theoretische und Angewandte Limnologie Verhandlungen 22:1828-1834.

Servizi, J. A., and D. W. Martens. 1987. Some effects of suspended Fraser River sediments on sockeye salmon (*Oncorhynchus nerka*), pp. 254-264. *In* H. D. Smith, L. Margolis, and C. C. Wood *eds.* Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. Canadian Special Publications of Fisheries and Aquatic Sciences 96.

Spence, B.C, G.A. Lomnicky, R.M. Hughes, R.P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, OR.

USDA Forest Service. 2003. Payette National Forest Land and Resource Management Plan. Intermountain Region, Payette National Forest.

Wagoner, L., and D.C. Burns. 2001. Biological Assessment for the Potential Effects of the Middle Fork Salmon River and Main Salmon River Tributaries NW and Main Salmon River Tributaries SE Section 7 Watersheds on Snake River Spring/Summer and Fall Chinook Salmon, Snake River Steelhead, and Columbia River Bull Trout, and Biological Evaluation for Westslope Cutthroat Trout - Volume 7: Ongoing and New Actions. Payette National Forest.

Wagoner, L., M. Faurot, and D.C. Burns. 2004. Biological Assessment for the Potential Effects of the Middle Fork Salmon River and Main Salmon River Tributaries NW SE Section 7 Watersheds on Snake River Spring/Summer Chinook Salmon, Snake River Steelhead, and Columbia River Bull Trout, and Biological Evaluation for Westslope Cutthroat Trout – Emergency Consultation for Fire Suppression Actions, Marble Fire and Monumental Road (FR 375) Repairs. Payette National Forest.

Washington Department of Fish and Wildlife, Washington State Department of Transportation, and Washington Department of Ecology. 2002. Washington State Aquatic Habitat Guidelines Program: Integrated Streambank Protection Guidelines 2003.

Wissmar, R.C., J.E. Smith, B.A. McIntosh, H.W. Li, G.H. Reeves, and J.R. Sedell. 1994. Ecological Health of River Basins in Forested Regions of Eastern Washington and Oregon. Gen. Tech. Rep. PNW-GTR-326. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Portland, Oregon. 65 p.